REMARKS

This is a full and timely response to the outstanding final Office Action mailed April 11, 2008 (Paper No. 20080407). Upon entry of this response, claims 38, 53-55, 66-78, 80-82, and 85-88 are pending in the application. In this response, claims 38, 53-55, 66-67, 70-71, 74, 78, 82, and 85 have been amended, and claims 79 and 83-84 have been cancelled. Applicant respectfully requests that the amendments being filed herewith be entered and request that there be reconsideration of all pending claims.

I. Claim Objections

Claim 85 is objected to because of an informality. Claim 85 is amended to depend from claim 38 rather than (cancelled) claim 28. Applicant respectfully submits that the objections are overcome, and request that the objections be withdrawn.

II. Rejection of Claims 38, 53-55, and 66-88 under 35 U.S.C. §103

Claims 38, 53-55, and 66-88 are rejected under §103(a) as allegedly obvious over *MacInnis et al.* (6,570,579) in view of *Boyce et al.* (5,614,952) and *Kalra et al.* (5,953,506). Applicant respectfully traverses this rejection. It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest (either implicitly or explicitly) all elements/features/steps of the claim at issue. *See, e.g., In re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

A. Independent Claim 38

1. The proposed combination does not teach "transferring the set of retrieved reconstructed decompressed video frames to a display device while downscaling the video picture in transit to the display device"

The Office Action admits (p. 3) *MacInnis et al.* does not disclose this feature, and *Kalra et al.* does not discuss downscaling at all. The Office Action alleges (p. 4) that *Boyce et al.* discloses this feature at Col. 17, lines 66-67 and Col. 18, line 16; Col. 2, lines 37-40; and FIG. 4. Applicant respectfully disagrees.

FIG. 4 of *Boyce et al.* is a simple block diagram of Picture-in-Picture Decoder 400, reproduced below:

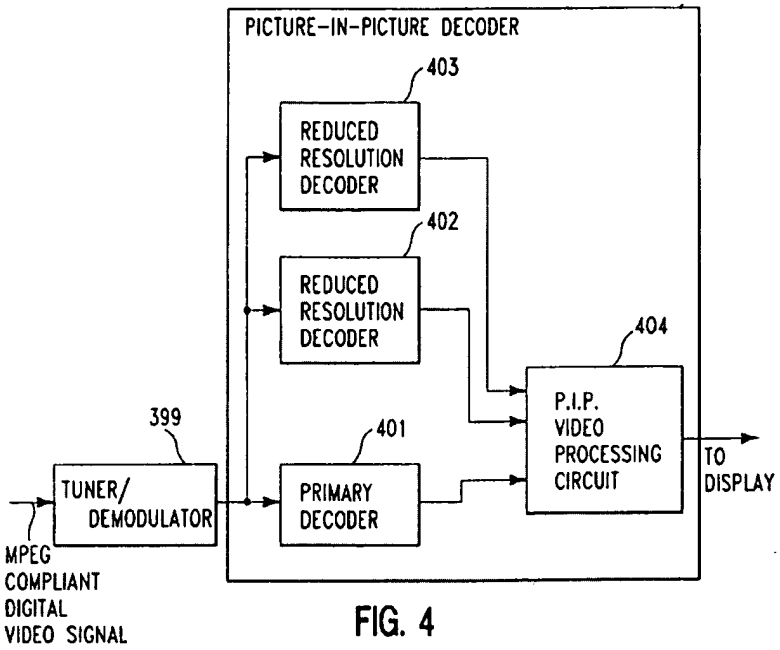

FIG. 4

Applicant agrees that this decoder 400 transfers a video picture to a display device, and also downscales the picture. However, Applicant respectfully submits that a high-level block diagram showing a path between a reduced resolution decoder, a PIP video processing circuit, and a display is not the same as the feature specifically recited in claim 38, namely: "transferring...to a display device ***while downscaling the video picture in transit*** to the display device."

Accordingly, the proposed combination of *MacInnis et al.* in view of *Boyce et al.* and *Kalra et al.* does not teach at least the above-described feature recited in claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection should be withdrawn.

2. The proposed combination does not teach "responsive to determining that one of the resource-constrained modes is to be initiated, operating the DHCT in the determined resource-constrained mode, including: retrieving a set of reconstructed decompressed video frames...and; transferring the set"

(a) *MacInnis et al.* does not teach this feature

The Office Action (p. 3) alleges that *MacInnis et al.* Col. 54 ll. 36-48 and Col. 55, ll. 8-35 teaches a resource constrained mode including retrieving and transferring, as recited in claim 38. Applicant respectfully disagrees. The portion of *MacInnis et al.* relied on by the Office Action is directed to a methodology for real-time scheduling of tasks. Applicant assumes (for the sake of argument) that a task with a real-time constraint to execute within a specific time period (*MacInnis et al.*, p. 54, lines 1-25) corresponds to a "resource constraint mode", and that a task without real-time constraint (*MacInnis et al.*, p. 55, lines 5-15) corresponds to a "non-resource

constraint mode". Applicant further assumes (for the sake of argument) that determining whether the next task to be executed is a real-time task corresponds to "determining whether one of the resource-constrained modes is to be initiated", and that executing one of the real-time tasks corresponds to "responsive to determining that the resource-constrained mode is to be initiated, operating the DHCT in the determined resource-constrained mode".

However, claim 38 further recites that "operating the DHCT in the determined resource-constrained mode" includes specific actions related to video data: "retrieving a set of reconstructed decompressed video frames...and transferring the set of retrieved reconstructed decompressed video frames to a display device...downscaling the video picture." While *MacInnis et al.* teaches a graphics display system that retrieves, transfers, and downscales video data (Cols. 5-6), *MacInnis et al.* does not teach that these actions are part of a "resource-constrained mode" or that these actions are performed in response to a mode determination, as recited in claim 38. In fact, the decoding and scaling of video data in Cols. 5-6 of *MacInnis et al.* is not tied in any way to the real-time and non-real-time tasks described in Cols. 54-55 of *MacInnis et al.*

(b) *Kalra et al.* does not teach this feature

The Office Action (p. 4) also alleges that *Kalra et al.* Col. 17 lines 10-67; to Col. 18 lines 1-24 teaches a resource constrained mode including retrieving and transferring, as recited in claim 38. Applicant respectfully disagrees. *Kalra et al.* describes a process used by a server to determine which streams to transmit to a client, based on a profile received from the client:

> With respect to step 552 and the determination of which streams to transmit, attention is directed to the flowchart in FIG. 15B1 which indicates the steps that the server takes to determine which of the particular streams to transmit. First, in step 552A, a network bandwidth constraint is applied to determine which bandwidth is available for this particular session. Thereafter, the CPU constraint is also applied as received from the profile from the client computer in order to determine if that constraints which adaptive streams can be transmitted. Thereafter, in step 552C, the video preference is used to further limit which adaptive streams to send and thus make a determination of which adaptive stream to transmit.
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> (*Kalra et al.*, Col. 16, lines 50-60)

The Office Action (p. 4) appears to allege that the network bandwidth, CPU, and video preference constraints mentioned in *Kalra et al.* correspond to "a plurality of resource-constrained modes" as recited in claim 38. The Office Action appears to further allege that applying one of these constraints corresponds to operating in the resource constrained mode. However, *Kalra et al.* teaches that all three constraints are applied, one after the other. In contrast, claim 38 teaches "***determining whether one*** of the resource constrained modes is to

be initiated" and "operating the DHCT in the determined resource-constrained mode" ***responsive to*** this determination.

(c) *Boyce et al.* does not teach this feature

The final reference, *Boyce et al.*, does not disclose, teach, or suggest a resource constrained mode, nor does the Office Action allege this. Accordingly, the proposed combination of *MacInnis et al.* in view of *Boyce et al.* and *Kalra et al.* does not teach at least the above-described features recited in claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 53 should be withdrawn.

3. The proposed combination is not proper

The proposed combination of *MacInnis et al.* in view of *Boyce et al.* and *Kalra et al.* is improper for at least the reasons discussed below. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 53 should be withdrawn.

(a) Teachings of *MacInnis et al.*

The Office Action relies on several passages in *MacInnis et al.* for teaching the modes recited in claim 38. These passages describe a methodology for real-time scheduling, as follows:

> The methodology used preferably implements real-time scheduling using Rate Monotonic Scheduling ("RMS"). It is a mathematical approach that allows the construction of provably correct schedules of arbitrary numbers of real-time tasks with arbitrary periods for each of the tasks. This methodology provides for a straight forward means for proof by simulation of the worst case scenario, and this simulation is simple enough that it can be done by hand. RMS, as normally applied, makes a number of simplifying assumptions in the creation of a priority list.
> (*MacInnis et al.*, Col. 54, ll. 10-20)

> To implement real-time scheduling based on the RMS methodology, first, all of the tasks or clients that need to access memory are preferably listed, not necessarily in any particular order. Next, the period of each of the tasks is preferably determined. For those with specific bandwidth requirements (in bytes per second of memory access), the period is preferably calculated from the bandwidth and the burst size. If the deadline is different from the period for any given task, that is listed as well. The resource requirement when a task is serviced is listed along with the task. In this case, the resource requirement is the number of memory clock cycles required to service the memory access request. The tasks are sorted in order of increasing period, and the result is the set of priorities, from highest to lowest. If there are multiple tasks with the same period, they can be given different, adjacent priorities in any random relative order within the group; or they can be grouped together and served with a single priority, with round-robin arbitration between those tasks at the same priority.

> In practice, the tasks sharing the unified memory do not all have true periodic behavior. In one embodiment of the present invention, a block out timer, associated with a task that does not normally have a period, is used in order to force a bounded minimum interval, similar to a period, on that task. For example a block out timer associated with the CPU has been implemented in this embodiment. If left uncontrolled, the CPU can occupy all available memory cycles, for example by causing a never-ending stream of cache misses and memory requests. At the same time, CPU performance is determined largely by "average latency of memory access", and so the CPU performance would be less than optimal if all CPU memory accessed were consigned to a sporadic server, i.e., at the lowest priority.
>
> In this embodiment, the CPU task has been converted into two logical tasks. A first CPU task has a very high priority for low latency, and it also has a block out timer associated with it such that once a request by the CPU is made, it cannot submit a request again until the block out timer has timed out. In this embodiment, the CPU task has the top priority. In other embodiments, the CPU task may have a very high priority but not the top priority. The timer period has been made programmable for system tuning, in order to accommodate different system configurations with different memory widths or other options.
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> (*MacInnis et al.*, Col. 55, ll. 15-60)

(b) Teachings of *Kalra et al.*

The Office Action relies on several passages in *Kalra, et al.* for teaching the modes recited in claim 38. These passages describe a process used by a server to determine which streams to transmit to a client, as follows:

> With respect to step 552 and the determination of which streams to transmit, attention is directed to the flowchart in FIG. 15B1 which indicates the steps that the server takes to determine which of the particular streams to transmit. First, in step 552A, a network bandwidth constraint is applied to determine which bandwidth is available for this particular session. Thereafter, the CPU constraint is also applied as received from the profile from the client computer in order to determine if that constraints which adaptive streams can be transmitted. Thereafter, in step 552C, the video preference is used to further limit which adaptive streams to send and thus make a determination of which adaptive stream to transmit.
>
> (*Kalra et al.* Col. 16, lines 49-60))

(c) *MacInnis et al.* is not properly combinable with *Kalra et al.*

The proposed combination in the Office Action combines teachings about task scheduling in *MacInnis et al.* with teachings about an adaptive video stream in *Kalra et al.* This combination is improper for at least the reasons discussed below.

In discussing *Kalra et al.*, the Office Action (p. 4) appears to allege that network bandwidth constraints, CPU constraints, and video preference constraints correspond to "a plurality of resource-constrained modes" as recited in claim 38.

In discussing *MacInnis et al.*, the Office Action (p. 3) did not allege specifically which features in *MacInnis et al.* correspond to which claimed features. Applicant assumes (for the sake of argument) that a task with a real-time constraint to execute within a specific time period (p. 54, lines 1-25 of *MacInnis et al.*) corresponds to a "resource constraint mode" and that a task without real-time constraint (p. 55, lines 5-15 of *MacInnis et al.*) corresponds to a "non-resource constraint mode".

A person of ordinary skill in the art has no reason to combine *MacInnis et al.*'s teachings about task scheduling with *Kalra et al.*'s teachings about applying constraints in order to determine which streams are transmitted. The Office Action interprets the "modes" recited in claim 38 to correspond to attributes of tasks as taught in *MacInnis et al.*, and simultaneously to correspond to constraints as taught in *Kalra et al.* Even if the interpretation of each reference is reasonable standing alone, the combination is nonsensical.

(d) Teachings of *Boyce et al.*

The Office Action relies upon the following passage in *Boyce et al.* for teaching the video processing actions recited in claim 38:

> The primary decoder 401 is responsible for decoding the main picture of a picture-in-picture image while the first and second decoders are responsible for generating separate images which will be displayed in a small area of the main picture. A separate reduced resolution decoder 402 or 403 is used for each additional image that is to be displayed in addition to the main picture.
>
> The output of the primary decoder 401 and the reduced resolution decoders 402, 403 is coupled to the input of a picture-in-picture video processing circuit which operates to combine the main picture with the reduced resolution pictures output by the reduced resolution decoders 402, 403 prior to the resulting combined picture being displayed.
>
> In one embodiment of the present invention the size of the reduced resolution pictures incorporated into the main picture is selected to be 1/4.times.1/4 the size of the normal picture. In such an embodiment, each MPEG 8 x 8 pixel block need only be decoded to a size corresponding to a block of 2 x 2 pixels.
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> (*Boyce et al.*, Col. 17, line 55 to Col. 18, line 15)

(e) *MacInnis et al.* is not properly combinable with *Boyce et al.*

As discussed above in section II.A.3(a), the portions of *MacInnis et al.* relied upon by the Office Action for teaching the modes recited in claim 38 are directed to real-time scheduling. As discussed above in section II.A.3(d), *Boyce et al.* is directed to video decoding. The Office

Action contends that a person of ordinary skill in the art would be motivated to combine the modes allegedly disclosed in *MacInnis et al.* with the specific video decoding techniques allegedly disclosed in *Boyce et al.* and recited in claim 38. Applicant respectfully disagrees.

Claim 38 does not simply recite specific actions related to video processing, but recites actions that are performed as part of a "resource-constrained mode", specifically: "retrieving a set of reconstructed decompressed video data...transferring the set ...to a display device while downscaling the video picture in transit to the display device." Claim 38 further recites that this mode is initiated responsive to a determination. Even assuming (for the sake of argument) that *Boyce et al.* discloses the claimed video processing actions, there is no reason for a person of ordinary skill in the art to combine these actions with the "modes" allegedly taught in *MacInnis et al.*. *MacInnis et al.* does not teach or suggest that any video processing actions be taken in the various "modes", much less suggest that the specific video processing actions recited in claim 38 be taken in these "modes". The alleged "modes" in *MacInnis et al.* relate to tasks and *Boyce et al.* is unrelated to tasks.

(f) *Kalra et al.* is not properly combinable with *Boyce et al.*

As discussed above in section II.A.3(b), the portions of *Kalra et al.* relied upon by the Office Action for teaching the modes recited in claim 38 describe a process used by a server to determine which streams to transmit to a client. As discussed above in section II.A.3(d), *Boyce et al.* is directed to video decoding. The Office Action contends that a person of ordinary skill in the art would be motivated to combine the modes allegedly disclosed in *Kalra et al.* with the specific video decoding techniques allegedly disclosed in *Boyce et al.* and recited in claim 38. Applicant respectfully disagrees.

Claim 38 does not simply recite specific actions related to video processing, but recites actions that are performed as part of a "resource-constrained mode", specifically: "retrieving a set of reconstructed decompressed video data...transferring the set ...to a display device while downscaling the video picture in transit to the display device." Claim 38 further recites that this mode is initiated responsive to a determination. Even assuming (for the sake of argument) that *Boyce et al.* discloses the claimed video processing actions, there is no reason for a person of ordinary skill in the art to combine these actions with the "modes" allegedly taught in *Kalra et al.* *Kalra et al.* does not teach or suggest that any video processing actions be taken in the various "modes", much less suggest that the specific video processing actions recited in claim 38 be taken in these "modes". The alleged "modes" in *Kalra et al.* relate to selecting video streams and *Boyce et al.* is unrelated to selecting video streams.

B. Independent Claim 53

1. The proposed combination does not teach "transferring the retrieved set of decoded frames to a display device while scaling the frames in transit to the display device...without storing the frames in the memory component"

The Office Action admits (p. 6) *MacInnis et al.* does not disclose this feature, and *Kalra et al.* does not discuss downscaling at all. The Office Action alleges (p. 6) that *Boyce et al.* discloses this feature at Col. 17, lines 66-67; Col. 18, lines 1-16; Col. 2, lines 37-40; and FIG. 4. Applicant respectfully disagrees.

Applicant agrees that this decoder 400 transfers a video picture to a display device, and also downscales the picture. Applicant will also assume (for the sake of argument) that the video picture in *Boyce et al.* includes multiple frames. However, *Boyce et al.* is silent about transferring while downscaling "without storing the frames in the memory component".

Furthermore, *Boyce et al.* contains no details about the structure of reduced resolution decoder 403, merely a broad statement about its function ("the first and second decoders are responsible for generating separate images which will be displayed in a small area of the main picture", Col. 17, line 65 to Col. 18, line 5). FIG. 4 of *Boyce et al.* is a simple block diagram of picture-in-picture decoder 400, reproduced below:

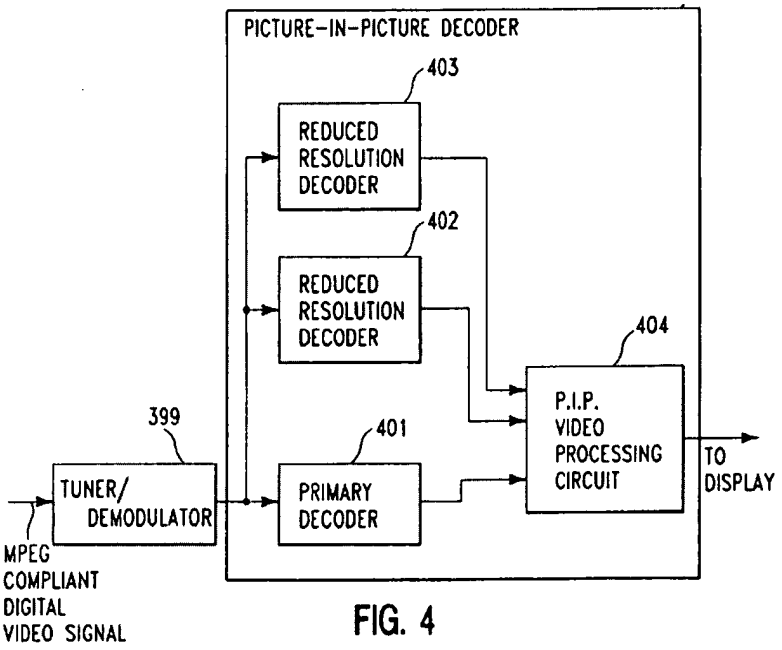

FIG. 4

Applicant notes that the block diagram of FIG. 4 does not show a memory component as part of picture-in-picture decoder 400. However, Applicant submits that the absence of a memory component from the high level block diagram of FIG. 4 is not equivalent to teaching the feature

that is specifically recited in claim 53, namely: "transferring the retrieved set of decoded frames to a display device while scaling the frames in transit to the display device...without storing the frames in the memory component".

Accordingly, the proposed combination of *MacInnis et al.* in view of *Boyce et al.* and *Kalra et al.* does not teach at least the above-described feature recited in claim 53. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 53 should be withdrawn.

2. The proposed combination does not teach "responsive to determining that one of the resource-constrained modes is to be initiated, initiating the resource-constrained mode including: retrieving a set of reconstructed decompressed video frames...and; transferring the set"

Applicant respectfully submits that the proposed combination does not teach this feature, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 53 should be withdrawn.

3. The proposed combination is not proper

Applicant respectfully submits that the combination of *MacInnis et al.* and *Kalra et al.* improper, as is the combination of *MacInnis et al.* and *Boyce et al.*, as is the combination of *Kalra et al.* and *Boyce et al.*, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 53 should be withdrawn.

C. Independent Claim 54

1. The proposed combination does not teach "logic configured to transfer the set of decoded frames to a display device while scaling the frames in transit to the display device...without storing the frames in the memory component"

Applicant respectfully submits that the proposed combination does not teach this feature, for reasons analogous to those discussed above in connection with claim 53. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 54 should be withdrawn.

2. The proposed combination does not teach "logic configured to, responsive to determining that one of the resource-constrained modes is to be initiated, initiate the resource-constrained mode including: logic configured to retrieve a set of reconstructed decompressed video frames...and; logic configured to transfer the set"

Applicant respectfully submits that the proposed combination does not teach this feature, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima*

facie case establishing an obviousness rejection has not been made, and the rejection of claim 54 should be withdrawn.

3. The proposed combination is not proper

Applicant respectfully submits that the combination of *MacInnis et al.* and *Kalra et al.* improper, as is the combination of *MacInnis et al.* and *Boyce et al.*, as is the combination of *Kalra et al.* and *Boyce et al.*, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claim 54 should be withdrawn.

D. Independent Claims 55 and 66

1. The proposed combination does not teach "transferring the retrieved video frames to a display device while downscaling the picture in transit to the display device"

Applicant respectfully submits that the proposed combination does not teach this feature, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claims 55 and 66 should be withdrawn.

2. The proposed combination does not teach "responsive to determining that one of the resource-constrained modes is to be initiated, initiating the resource-constrained mode including: retrieving a set of reconstructed decompressed video frames...and; transferring the set"

Applicant respectfully submits that the proposed combination does not teach this feature, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claims 55 and 66 should be withdrawn.

3. The proposed combination is not proper

Applicant respectfully submits that the combination of *MacInnis et al.* and *Kalra et al.* improper, as is the combination of *MacInnis et al.* and *Boyce et al.*, as is the combination of *Kalra et al.* and *Boyce et al.*, for reasons analogous to those discussed above in connection with claim 38. Therefore, a *prima facie* case establishing an obviousness rejection has not been made, and the rejection of claims 55 and 66 should be withdrawn.

E. Dependent Claims 73 and 83-84

Claims 73 and 83-84are cancelled without prejudice, waiver, or disclaimer, and the rejection of these claims is therefore rendered moot. Applicant takes this action merely to

reduce the number of disputed issues and to facilitate early allowance and issuance of other claims in the present application. Applicant reserves the right to pursue the subject matter of these cancelled claims in a continuing application, if Applicant so chooses, and does not intend to dedicate any of the cancelled subject matter to the public. Applicant expressly reserves the right to present cancelled claims 73 and 83-84, or variants thereof, in continuing applications to be filed subsequent to the present application.

F. Dependent Claims 67-72, 74-82, and 85-88

Since independent claims 38, 53, 54, 55, and 66 are allowable, Applicant respectfully submits that claims 67-72, 74-82, and 85-88 are allowable for at least the reason that each depends from an allowable claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596, 1598 (Fed. Cir. 1988). Therefore, Applicant respectfully requests that the rejection of claims 67-72, 74-82, and 85-88 be withdrawn.

CONCLUSION

Applicant respectfully requests that all outstanding objections and rejections be withdrawn and that this application and presently pending claims 38, 53-55, 66-78, 80-82, and 85-88 be allowed to issue. Any statements in athe Office Action that are not explicitly addressed herein are not intended to be admitted. In addition, any and all findings of inherency are traversed as not having been shown to be necessarily present. Furthermore, any and all findings of well-known art and official notice, or statements interpreted similarly, should not be considered well known since the Office Action does not include specific factual findings predicated on sound technical and scientific reasoning to support such conclusions. If the Examiner has any questions or comments regarding Applicant's response, the Examiner is encouraged to telephone Applicant's undersigned counsel.

Respectfully submitted,

By: /Karen G. Hazzah/

Karen G. Hazzah, Reg. No. 48,472

THOMAS, KAYDEN, HORSTEMEYER & RISLEY, L.L.P.

600 Galleria Parkway, NW
Suite 1500
Atlanta, Georgia 30339-5948
Tel: (770) 933-9500
Fax: (770) 951-0933